Space Weather Forecast

Issued on Wednesday, 25 May 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of moderate solar activity and R1-R2 radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low during the last 24 hours with only Common class flare activity observed, mainly from two large sunspots in the northwest quadrant. A common class flare was also from a new region near the southeast limb. The remaining five regions are all small and currently benign. No Earth-directed coronal mass ejections (CMEs) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been at mainly background levels through the last 24 hours due to the continued easing of a fast solar wind. Total magnetic field strength has been weak with only a brief moderate peak, however the north-south component remained weak and variable between north-directed and south-directed. Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low, but with a chance of Moderate activity and a very slight chance of High activity. This is due to three moderately large and complex regions; two in the northwestern quadrant and one near the eastern limb. Additionally there is the potential for further new complex regions to rotate across the eastern limb in the coming days.

Solar Wind / Geomagnetic Activity: No CMEs are currently on the Earth-Sun line. Solar winds are expected to rise from background to elevated on day 2 and into day 3 (26th and 27th) due to the arrival of fast winds of a coronal hole. Geomagnetic activity is expected to be Quiet at first, increasing to Unsettled to Active with a slight chance of G1/Minor Storms day 2 and into day 3 (26th and 27th). Geomagnetic activity should return to Quiet or Unsettled levels by Day 4 (28th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring, although there is a slight chance due to the large sunspots in the west disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	20	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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